

WHAT IS CLAIMED IS:

1. A semiconductor device comprising:

an intermediate layer formed on a semiconductor substrate, the intermediate layer being formed of an oxide containing a first element which is either of a III group element and a V group element;

an insulation film formed on the intermediate layer, the insulation film being formed of an oxide of a second element which is the other of the III group element and the V group element; and

an electrode formed on the insulation film.

2. A semiconductor device according to claim 1, further comprising:

another intermediate layer formed between the insulation film and the electrode, said another intermediate layer being formed of an oxide containing the first element.

3. A semiconductor device according to claim 1, wherein the intermediate layer is formed of an oxide containing the first element and the second element.

4. A semiconductor device according to claim 2, wherein the intermediate layer and/or said another intermediate layer is formed of an oxide containing the first element and the second element.

5. A semiconductor device according to claim 1, wherein the insulation film has a thickness of 5 nm or below.

6. A semiconductor device according to claim 2, wherein the insulation film has a thickness of 5 nm or below.
7. A semiconductor device according to claim 1, wherein the second element is Al, Sc, Y or La.
8. A semiconductor device according to claim 2, wherein the second element is Al, Sc, Y or La.
9. A semiconductor device according to claim 7, wherein the insulation film is an Al_2O_3 film, Sc_2O_3 film, Y_2O_3 film or La_2O_3 film.
10. A semiconductor device according to claim 8, wherein the insulation film is an Al_2O_3 film, Sc_2O_3 film, Y_2O_3 film or La_2O_3 film.
11. A semiconductor device according to claim 1, wherein the first element is Ta, V, Nb, Th or U.
12. A semiconductor device according to claim 1, wherein the first element is Ta, V, Nb, Th or U.
13. A semiconductor device according to claim 1, wherein the intermediate layer further contains nitrogen.
14. A semiconductor device according to claim 2, wherein the intermediate layer and/or said another intermediate layer further contains nitrogen.
15. A semiconductor device comprising:
 - an insulation film formed on a semiconductor substrate, the insulation film being formed of an oxide of either of a III group element and a V group element;
 - an intermediate layer formed on the insulation film, the

intermediate layer being formed of an oxide containing the other of the III group element and the V group element; and

an electrode formed on the intermediate layer.

16. A method for fabricating a semiconductor device comprising the steps of:

forming an intermediate layer of an oxide containing a first element which is either of a III group element and a V group element on a semiconductor substrate;

forming an insulation film of an oxide of a second element which is the other of the III group element and the V group element on the intermediate layer; and

forming an electrode on the insulation film.

17. A method for fabricating a semiconductor device according to claim 16, wherein

in the step of forming an intermediate layer, a first raw material containing the first element and a second raw material containing the second element are used to form the intermediate layer of an oxide containing the first element and the second element; and

in the step of forming an insulation film, the insulation film is formed of the second raw material.

18. A method for fabricating a semiconductor device according to claim 16, further comprising, after the step of forming the insulation film and before the step of forming the electrode, the step of using the first raw material and the second raw material to form another intermediate layer of an oxide

containing the first element and the second element.

19. A method for fabricating a semiconductor device according to claim 17, further comprising, after the step of forming the insulation film and before the step of forming the electrode, the step of using the first raw material and the second raw material to form another intermediate layer of an oxide containing the first element and the second element.